

WHAT IS CLAIMED IS:

1. A power supply device, comprising:

a main power supply circuit for supplying power to a main control section of a main apparatus, the main apparatus including an interface section for communicating with an external device, the interface section having a signal detection circuit for detecting an external signal;

an auxiliary power supply circuit for supplying power to the signal detection circuit; and

a power control section configured to control the main power supply circuit and the auxiliary power supply circuit respectively, the power control section being configured to turn the main power supply circuit off and turn the auxiliary power supply circuit on when the main apparatus is in power saving mode, and to restart the main power supply circuit upon the detection of external signal by the signal detection circuit.

2. The power supply device according to claim 1,

wherein the signal detection circuit is devoid of any clock generation circuit.

3. The power supply device according to claim 1,

wherein the interface section includes a interface having a power supply line, and

wherein the signal detection circuit is supplied with power through the power supply line.

4. The power supply device according to claim 3,
wherein the auxiliary power supply circuit is charged intermittently by the main power supply circuit or an interface having a power supply line.

5. The power supply device according to claim 3,
wherein the auxiliary power supply circuit is charged by the main power supply circuit or an interface having a power supply line when the auxiliary power supply circuit outputs voltage lower than a predetermined value.

6. The power supply device according to claim 1,
wherein the power control section is configured to determine that external signal input to the signal detection circuit is valid only when the signal matches a predetermined pattern.

7. The power supply device according to claim 1,
wherein the power control section is configured to determine that external signal input to the signal detection circuit is valid only when the signal continues for a predetermined period.

8. The power supply device according to claim 1,
wherein the power control section is configured to
determine that power saving request for switching the power
supply device to the power saving mode is valid only when
the power saving request matches a predetermined pattern.

9. The power supply device according to claim 1,
wherein the power control section is configured to
determine that power saving request for switching the power
supply device to the power saving mode is valid only when
the power saving request continues for a predetermined
period.

10. The power supply device according to claim 1,
wherein the power control section is configured to render
the main power supply circuit off, even if an external
signal input to the signal detection circuit is detected,
until the main power supply circuit stops completely after
receiving power saving request which indicates that the
main apparatus is shifting to the power saving operation
mode.

11. The power supply device according to claim 10,
wherein the power control section is configured to

determine that the power saving request is valid only when the power saving request continues for a predetermined period.

12. The power supply device according to claim 11, wherein the power control section is configured to determine that external signal input to the signal detection circuit is valid when the signal is input thereto within a predetermined period after the input of the power saving request and to render the main power supply circuit on-state.

13. The power supply device according to claim 12, wherein the power control section is configured to reject subsequent power saving requests until ongoing power saving request is withdrawn.

14. A communication system, comprising:
a power supply device, having
a main power supply circuit for supplying power to the main control section of a main apparatus, the main apparatus including an interface section for communicating with an external device, the interface section having a signal detection circuit for detecting an external signal,
an auxiliary power supply circuit for supplying

power to the signal detection circuit, and

a power control section configured to control the main power supply circuit and the auxiliary power supply circuit respectively, the power control section being configured to turn the main power supply circuit off and turn the auxiliary power supply circuit on when the main apparatus is in power saving mode, and to restart the main power supply circuit upon the detection of external signal by the signal detection circuit; and

an external device connected to the main apparatus through the interface section,

wherein the external device transmits a piece of data repeatedly to the main apparatus.

15. The communication system according to claim 14,
wherein the external device recognizes lack of response as a communication error only after a predetermined number of times of sending the same piece of data.